AMENDMENTS TO THE CLAIMS

1. (Currently amended) A recording method for forming recording marks according to a mark length modulation by irradiating a pulse-shaped light beam with respect to a crystallized phase change recording layer of a phase change type optical recording medium which comprises at least the phase change recording layer and a reflection layer on a substrate, said recording method comprising:

irradiating a light beam formed by a single recording pulse when forming a recording mark having a size less than or equal to a predetermined size *N*, said predetermined size *N* being set with reference to a reference size which is sum of a beam spot diameter of the light beam and a distance traveled by the light beam within a time amounting to a sum of rising and falling time constants of a light beam power, wherein the predetermined size *N* is set to 0.55 times ±10% of the reference size; and

irradiating a light beam formed by a plurality of recording pulses when forming a recording mark having a size greater than the predetermined size *N*.

2. (Cancelled)

3. (Original) The recording method as claimed in claim 2, wherein said irradiating the light beam formed by the plurality of recording pulses irradiates a light beam formed by p+1 recording pulses when forming a recording mark which has a size greater than p*N* and less than or equal to (p+1)*N*, where p is an integer greater than or equal to 1.

4. (Currently amended) The recording method as claimed in claim 2, wherein:

said plurality of recording pulses form a pulse train ~~(N_1+N+N+...)~~ (N_1,N,N,...) which is made up of a start pulse N_1 having a size which is obtained by multiplying

1.3±0.1 to the predetermined size *N*, and subsequent pulses N having the predetermined size *N*; and

said irradiating the light beam formed by the plurality of recording pulses irradiates a light beam formed by a number of recording pulses determined by the pulse train ~~(N_1+N+N+...)~~ (N_1,N,N,...) when forming the recording mark.

5. (Original) The recording method as claimed in claim 4, wherein said mark length modulation is an Eight-to-Fourteen Modulation (EFM) Plus modulation (EFM+ modulation), and the number of recording pulses for forming EFM mark lengths of 3T to 14T under recording conditions where an optical system used has a pickup with a Numerical Aperture (N.A.) of 0.65±2, emits the light beam having a wavelength of approximately 660 nm with a recording linear velocity set to 20 m/sec to 42 m/sec, is set to 1 for 3T to 5T, 2 for 6T to 8T, 3 for 9T to 11T, and 4 for 14T.

6. (Original) The recording method as claimed in claim 4, wherein said irradiating the light beam formed by the single recording pulse adds a preheating pulse before the single recording pulse.

7. (Original) The recording method as claimed in claim 4, wherein said preheating pulse has an irradiation time which is greater than or equal to one channel period and is less than or equal to two channel periods, and a power which takes an intermediate value between a recording power and an erasing power of the single recording pulse when recording an EFM mark length of 3T by said single recording pulse.

8. (Currently amended) A phase change type optical recording medium comprising:

a substrate;

a crystallized phase change recording layer disposed above the substrate, to receive a pulse-shaped light beam when forming recording marks by a mark length modulation; and

a reflection layer disposed above the phase change recording layer,

wherein said phase change recording layer is made of a material having a composition ratio near an eutectic composition of Sb and Ga, and receives a light beam formed by a single recording pulse when forming a recording mark having a size less than or equal to a predetermined size *N*, and receives a light beam formed by a plurality of recording pulses when forming a recording mark having a size greater than the predetermined size *N*, said predetermined size *N* being set with reference to a reference size which is sum of a beam spot diameter of the light beam and a distance traveled by the light beam within a time amounting to a sum of rising and falling time constants of a light beam power, wherein the predetermined size *N* is set to 0.55 times ±10% of the reference size.

9. (Original) The phase change type optical recording medium as claimed in claim 8, wherein said phase change recording layer further includes in the SbGa eutectic composition 15 at.% or less of at least one element selected from a group consisting of Ge, In, Mn and Sn.

10. (Currently amended) ~~The phase change type optical recording medium as claimed in claim~~ 8 A phase change type optical recording medium comprising:

a substrate;

a crystallized phase change recording layer disposed above the substrate, to receive a pulse-shaped light beam when forming recording marks by a mark length modulation; and

a reflection layer disposed above the phase change recording layer,

wherein said phase change recording layer is made of a material having a composition ratio near an eutectic composition of Sb and Ga, and receives a light beam formed by a single recording pulse when forming a recording mark having a size less than or equal to a predetermined size *N*, and receives a light beam formed by a plurality of recording pulses when forming a recording mark having a size greater than the predetermined size *N*, said predetermined size *N* being set with reference to a reference size which is sum of a beam spot diameter of the light beam and a distance traveled by the light beam within a time amounting to a sum of rising and falling time constants of a light beam power, and

wherein said plurality of recording pulses form a pulse train ~~(N_1+N+N+...)~~ (N_1,N,N,...) which is made up of a start pulse N_1 having a size which is obtained by multiplying 1.3±0.1 to the predetermined size *N*, and subsequent pulses N having the predetermined size *N*, and a number of recording pulses received by said phase change recording layer is determined by the pulse train ~~(N_1+N+N+...)~~ (N_1,N,N,...) when forming the recording mark.

11. (Original) The phase change type optical recording medium as claimed in claim 10, which has a reflectively greater than or equal to 15% and a modulation factor greater than or equal to 0.4 at the time of a reproduction when recording conditions are such that said mark length modulation is an Eight-to-Fourteen Modulation (EFM) Plus modulation (EFM+ modulation), and the number of recording pulses received by said

phase change recording layer for forming EFM mark lengths of 3T to 14T using an optical system which has a pickup with a Numerical Aperture (N.A.) of 0.65±2, emits the light beam having a wavelength of approximately 660 nm with a recording linear velocity set to 20 m/sec to 42 m/sec, is set to 1 for 3T to 5T, 2 for 6T to 8T, 3 for 9T to 11T, and 4 for 14T.

12. (Original) The phase change type optical recording medium as claimed in claim 10, wherein said phase change recording layer receives the light beam formed by the single recording pulse and is added with a preheating pulse before the single recording pulse.

13. (Original) The phase change type optical recording medium as claimed in claim 12, which has a reflectively greater than or equal to 15% and a modulation factor greater than or equal to 0.4 at the time of a reproduction when recording conditions are such that said preheating pulse has an irradiation time which is greater than or equal to one channel period and is less than or equal to two channel periods, and a power which takes an intermediate value between a recording power and an erasing power of the single recording pulse when recording an EFM mark length of 3T by said single recording pulse.

14. (Original) The phase change type optical recording medium as claimed in claim 10, which has a reflectively greater than or equal to 15% and a modulation factor greater than or equal to 0.4 at the time of a reproduction when recording conditions are such that:

said mark length modulation is an Eight-to-Fourteen Modulation (EFM) Plus modulation (EFM+ modulation),

the number of recording pulses received by said phase change recording layer for forming EFM mark lengths of 3T to 14T using an optical system which has a pickup with a Numerical Aperture (N.A.) of 0.65±2, emits the light beam having a wavelength of approximately 660 nm with a recording linear velocity set to 20 m/sec to 42 m/sec, is set to 1 for 3T to 5T, 2 for 6T to 8T, 3 for 9T to 11T, and 4 for 14T, and

said phase change recording layer receives the light beam formed by the single recording pulse and is added with a preheating pulse before the single recording pulse,

wherein said preheating pulse has an irradiation time which is greater than or equal to one channel period and is less than or equal to two channel periods, and a power which takes an intermediate value between a recording power and an erasing power of the single recording pulse when recording an EFM mark length of 3T by said single recording pulse.